

Student faculty

```
CREATE DATABASE student_faculty;
```

```
USE student_faculty;
```

```
CREATE TABLE student(  
    snum INT,  
    sname VARCHAR(10),  
    major VARCHAR(2),  
    lvl VARCHAR(2),  
    age INT, primary key(snum));
```

```
CREATE TABLE faculty(  
    fid INT,fname VARCHAR(20),  
    deptid INT,  
    PRIMARY KEY(fid));
```

```
CREATE TABLE class(  
    cname VARCHAR(20),  
    metts_at TIMESTAMP,  
    room VARCHAR(10),  
    fid INT,  
    PRIMARY KEY(cname),  
    FOREIGN KEY(fid) REFERENCES faculty(fid));
```

```
CREATE TABLE enrolled(  
    snum INT,  
    cname VARCHAR(20),  
    PRIMARY KEY(snum,cname),  
    FOREIGN KEY(snum) REFERENCES student(snum),  
    FOREIGN KEY(cname) REFERENCES class(cname));
```

```

INSERT INTO STUDENT VALUES(1, 'Jhon', 'CS', 'Sr', 19);

INSERT INTO STUDENT VALUES(2, 'Smith', 'CS', 'Jr', 20);

INSERT INTO STUDENT VALUES(3, 'Jacob', 'CV', 'Sr', 20);

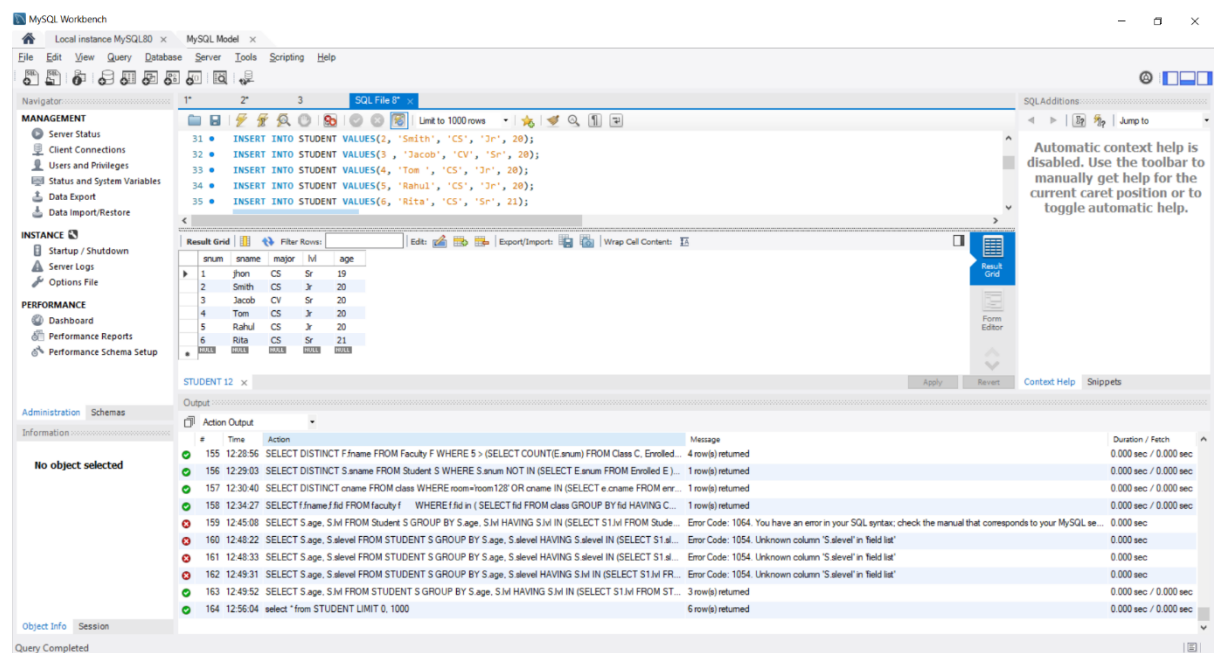
INSERT INTO STUDENT VALUES(4, 'Tom ', 'CS', 'Jr', 20);

INSERT INTO STUDENT VALUES(5, 'Rahul', 'CS', 'Jr', 20);

INSERT INTO STUDENT VALUES(6, 'Rita', 'CS', 'Sr', 21);

select * from STUDENT;

```



```

INSERT INTO FACULTY VALUES(11, 'Harish', 1000);

INSERT INTO FACULTY VALUES(12, 'MV', 1000);

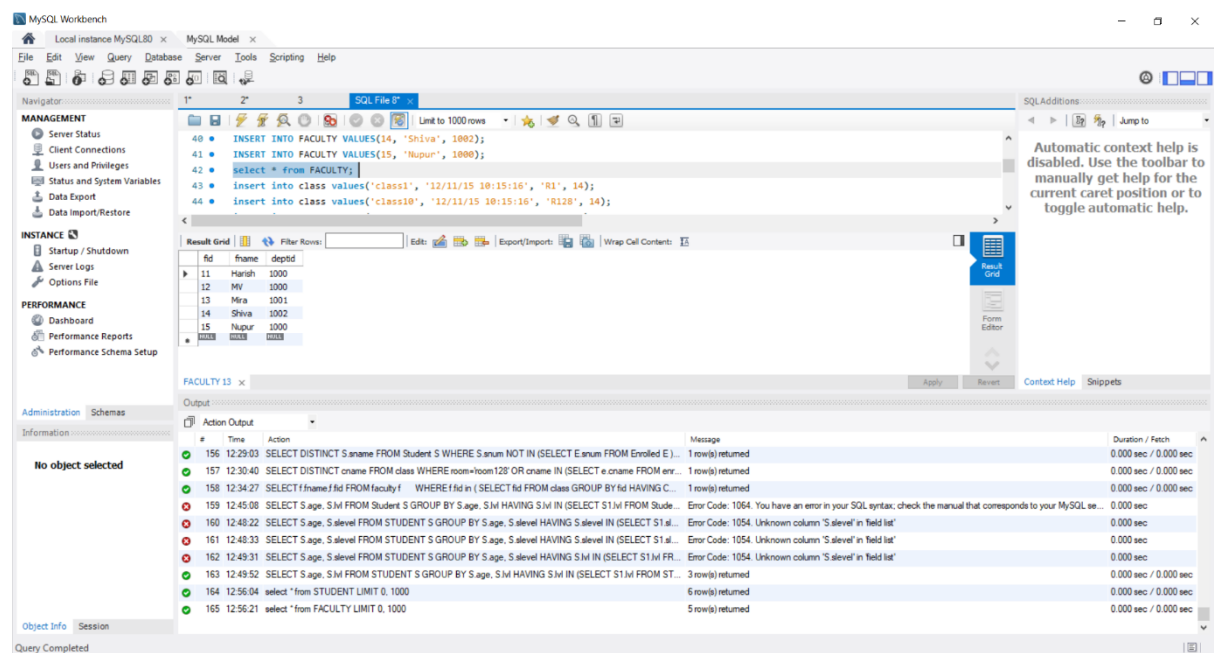
INSERT INTO FACULTY VALUES(13, 'Mira', 1001);

INSERT INTO FACULTY VALUES(14, 'Shiva', 1002);

INSERT INTO FACULTY VALUES(15, 'Nupur', 1000);

select * from FACULTY;

```



```

insert into class values('class1', '12/11/15 10:15:16', 'R1', 14);
insert into class values('class10', '12/11/15 10:15:16', 'R128', 14);
insert into class values('class2', '12/11/15 10:15:20', 'R2', 12);
insert into class values('class3', '12/11/15 10:15:25', 'R3', 11);
insert into class values('class4', '12/11/15 20:15:20', 'R4', 14);
insert into class values('class5', '12/11/15 20:15:20', 'R3', 15);
insert into class values('class6', '12/11/15 13:20:20', 'R2', 14);
insert into class values('class7', '12/11/15 10:10:10', 'R3', 14);
select * from class;

```

The screenshot shows the MySQL Workbench interface. The SQL Editor at the top contains the following queries:

```

49 • insert into class values('class6', '12/11/15 13:20:20', 'R2', 14);
50 • insert into class values('class7', '12/11/15 10:10:10', 'R3', 14);
51 • select * from class;
52 • insert into enrolled values(1, 'class1');
53 • insert into enrolled values(2, 'class1');

```

The Result Grid below shows the data for 'class 14':

cname	metts_at	room	fd
class1	2012-11-15 10:15:16	R1	14
class10	2012-11-15 10:15:16	R128	14
class2	2012-11-15 10:15:20	R2	12
class3	2012-11-15 10:15:25	R3	11
class4	2012-11-15 20:15:20	R4	14
class5	2012-11-15 20:15:20	R3	15
class6	2012-11-15 13:20:20	R2	14
class7	2012-11-15 10:10:10	R3	14

The Output window at the bottom shows the execution log:

#	Time	Action	Message	Duration / Fech
157	12:30:40	SELECT DISTINCT cname FROM class WHERE room='room128' OR cname IN (SELECT e.cname FROM enr...	1 row(s) returned	0.000 sec / 0.000 sec
158	12:34:27	SELECT f.fname,f.fid FROM faculty f WHERE f.fid in (SELECT fd FROM class GROUP BY fd HAVING C...	1 row(s) returned	0.000 sec / 0.000 sec
159	12:45:08	SELECT S.age, S.m FROM STUDENT S GROUP BY S.age, S.m HAVING S.m IN (SELECT S1.m FROM STUDE...	Error Code: 1064. You have an error in your SQL syntax; check the manual that corresponds to your MySQL se...	0.000 sec
160	12:48:22	SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.slevel IN (SELECT S1.al...	Error Code: 1054. Unknown column 'S.slevel' in field list	0.000 sec
161	12:48:33	SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.slevel IN (SELECT S1.al...	Error Code: 1054. Unknown column 'S.slevel' in field list	0.000 sec
162	12:49:31	SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.m IN (SELECT S1.m FR...	Error Code: 1054. Unknown column 'S.slevel' in field list	0.000 sec
163	12:49:52	SELECT S.age, S.m FROM STUDENT S GROUP BY S.age, S.m HAVING S.m IN (SELECT S1.m FROM ST...	3 row(s) returned	0.000 sec / 0.000 sec
164	12:56:04	select * from STUDENT LIMIT 0, 1000	6 row(s) returned	0.000 sec / 0.000 sec
165	12:56:21	select * from FACULTY LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
166	12:56:30	select * from class LIMIT 0, 1000	8 row(s) returned	0.000 sec / 0.000 sec

```

insert into enrolled values(1, 'class1');

insert into enrolled values(2, 'class1');

insert into enrolled values(3, 'class3');

insert into enrolled values(4, 'class3');

insert into enrolled values(5, 'class4');

insert into enrolled values(1, 'class5');

insert into enrolled values(2, 'class5');

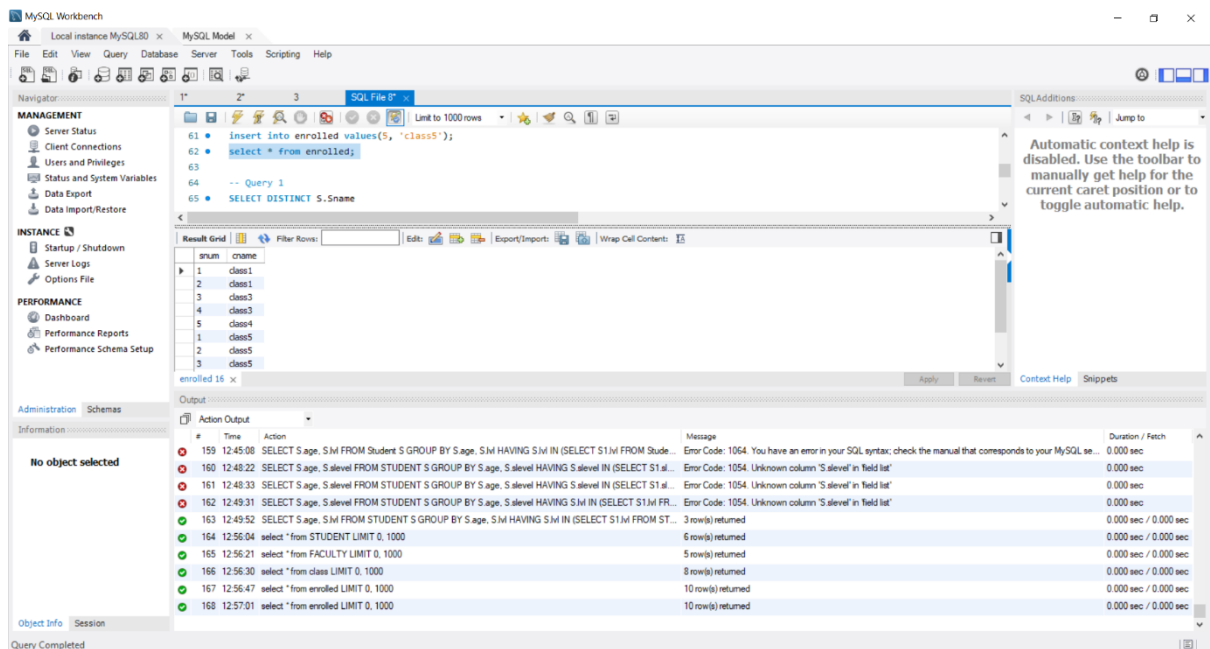
insert into enrolled values(3, 'class5');

insert into enrolled values(4, 'class5');

insert into enrolled values(5, 'class5');

select * from enrolled;

```



-- Query 1

SELECT DISTINCT S.Sname

FROM Student S, Class C, Enrolled E, Faculty F

WHERE S.snum = E.snum AND E.cname = C.cname AND C.fid = F.fid AND

F.fname = 'Harish' AND S.lvl = 'Jr';

The screenshot displays the MySQL Workbench interface. The main editor shows the following SQL query:

```
-- Query 1
SELECT DISTINCT S.Sname
FROM Student S, Class C, Enrolled E, Faculty F
WHERE S.snum = E.snum AND E.cname = C.cname AND C.fid = F.fid AND
F.fname = 'Harish' AND S.lvl = 'Jr';
```

The query is executed, and the results are shown in the 'Result Grid' tab. The results are as follows:

Sname
Tom

The 'Output' tab shows the execution log, including the following messages:

- 160 12:48:22 SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.slevel IN (SELECT S1.slevel FROM STUDENT S1 WHERE S1.slevel < S.slevel) Error Code: 1054. Unknown column 'S.slevel' in 'field list' 0.000 sec
- 161 12:48:33 SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.slevel IN (SELECT S1.slevel FROM STUDENT S1 WHERE S1.slevel < S.slevel) Error Code: 1054. Unknown column 'S.slevel' in 'field list' 0.000 sec
- 162 12:49:31 SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.slevel IN (SELECT S1.slevel FROM STUDENT S1 WHERE S1.slevel < S.slevel) Error Code: 1054. Unknown column 'S.slevel' in 'field list' 0.000 sec
- 163 12:49:52 SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.slevel IN (SELECT S1.slevel FROM STUDENT S1 WHERE S1.slevel < S.slevel) 3 row(s) returned 0.000 sec / 0.000 sec
- 164 12:56:04 select * from STUDENT LIMIT 0, 1000 6 row(s) returned 0.000 sec / 0.000 sec
- 165 12:56:21 select * from FACULTY LIMIT 0, 1000 5 row(s) returned 0.000 sec / 0.000 sec
- 166 12:56:30 select * from class LIMIT 0, 1000 8 row(s) returned 0.000 sec / 0.000 sec
- 167 12:56:47 select * from enrolled LIMIT 0, 1000 10 row(s) returned 0.000 sec / 0.000 sec
- 168 12:57:01 select * from enrolled LIMIT 0, 1000 10 row(s) returned 0.000 sec / 0.000 sec
- 169 13:04:31 SELECT DISTINCT S.Sname FROM Student S, Class C, Enrolled E, Faculty F WHERE S.snum = E.snum AND E.cname = C.cname AND C.fid = F.fid AND F.fname = 'Harish' AND S.lvl = 'Jr'; 1 row(s) returned 0.000 sec / 0.000 sec

The 'Object Info' tab shows 'No object selected'.

-- Query 2

SELECT DISTINCT cname

FROM class

WHERE room='room128'

OR

cname IN (SELECT e.cname FROM enrolled e GROUP BY e.cname HAVING COUNT(*)>=5);

The screenshot displays the MySQL Workbench interface. The central editor shows the following SQL query:

```
-- Query 2
93 SELECT DISTINCT cname
94 FROM class
95 WHERE room='room128'
96 OR
97 cname IN (SELECT e.cname FROM enrolled e GROUP BY e.cname HAVING COUNT(*)>=5);
98
99 -- Query 4
```

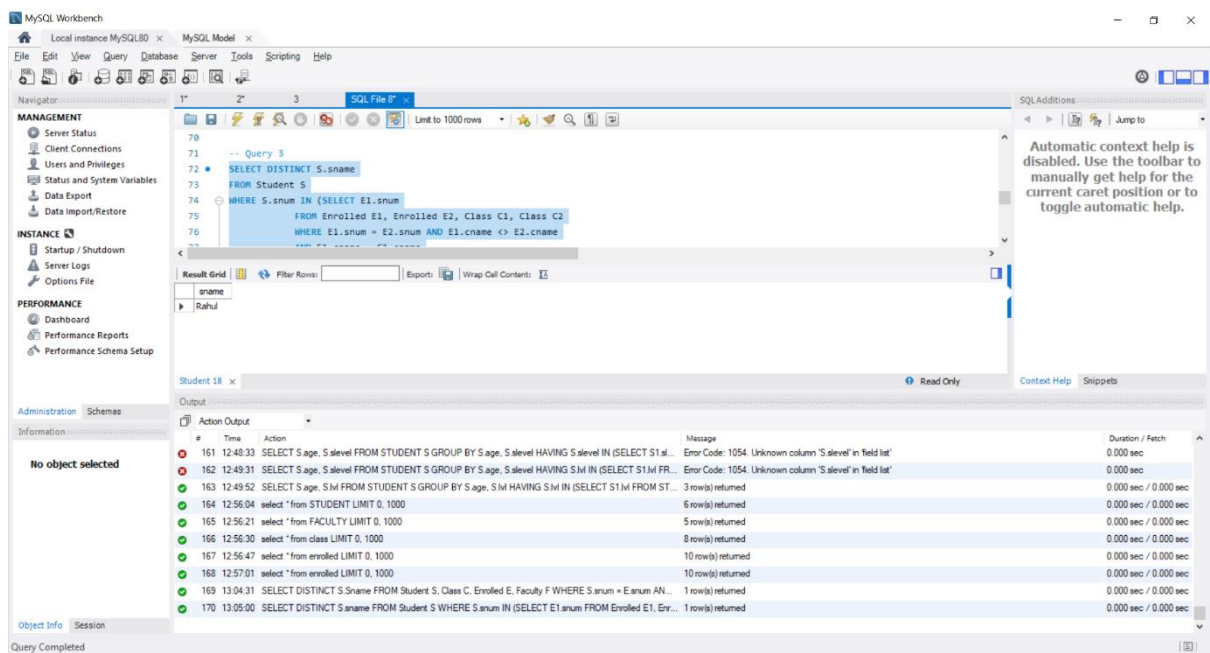
The left sidebar contains the 'MANAGEMENT' and 'INSTANCE' sections. The 'MANAGEMENT' section includes 'Server Status', 'Client Connections', 'Users and Privileges', 'Status and System Variables', 'Data Export', and 'Data Import/Restore'. The 'INSTANCE' section includes 'Startup / Shutdown', 'Server Logs', and 'Options File'. The 'PERFORMANCE' section includes 'Dashboard', 'Performance Reports', and 'Performance Schema Setup'. The 'Administration' section includes 'Schemas' and 'Information'. The 'Information' section shows 'No object selected'.

The bottom panel shows the 'Output' tab with a table of execution results:

#	Time	Action	Message	Duration / Fetch
166	12:56:30	select * from class LIMIT 0, 1000	8 row(s) returned	0.000 sec / 0.000 sec
167	12:56:47	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
168	12:57:01	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
169	13:04:31	SELECT DISTINCT S.sname FROM Student S, Class C, Enrolled E, Faculty F WHERE S.snum = E.snum AND...	1 row(s) returned	0.000 sec / 0.000 sec
170	13:05:00	SELECT DISTINCT S.sname FROM Student S WHERE S.snum IN (SELECT E1.snum FROM Enrolled E1, Enr...	1 row(s) returned	0.000 sec / 0.000 sec
171	13:05:14	SELECT f.fname, f.fid FROM faculty f WHERE f.fid IN (SELECT f.fid FROM class GROUP BY f.fid HAVING C...	1 row(s) returned	0.000 sec / 0.000 sec
172	13:05:25	SELECT DISTINCT F.fname FROM Faculty F WHERE 5 > (SELECT COUNT(E.snum) FROM Class C, Enroll...	4 row(s) returned	0.000 sec / 0.000 sec
173	13:05:37	SELECT DISTINCT S.sname FROM Student S WHERE S.snum NOT IN (SELECT E.snum FROM Enrolled E)...	1 row(s) returned	0.016 sec / 0.000 sec
174	13:05:51	SELECT S.age, S.m FROM STUDENT S GROUP BY S.age, S.m HAVING S.m IN (SELECT S1.m FROM ST...	3 row(s) returned	0.000 sec / 0.000 sec
175	13:06:26	SELECT DISTINCT cname FROM class WHERE room='room128' OR cname IN (SELECT e.cname FROM enr...	1 row(s) returned	0.000 sec / 0.000 sec

The bottom status bar indicates 'Query Completed'.

AND E2.cname = C2.cname AND C1.metts_at = C2.metts_at);



-- Query 4

SELECT f.fname,f.fid

FROM faculty f

WHERE f.fid in (SELECT fid FROM class

GROUP BY fid HAVING COUNT(*)=(SELECT COUNT(DISTINCT room) FROM class));

The screenshot shows the MySQL Workbench interface. The main window displays the following SQL code:

```
97 OR
98 cname IN (SELECT e.cname FROM enrolled e GROUP BY e.cname HAVING COUNT(*)>=5);
99 -- Query 4
100 SELECT f.fname,f.fid
101 FROM faculty f
102 WHERE f.fid in ( SELECT fid FROM class
103 GROUP BY fid HAVING COUNT(*)=(SELECT COUNT(DISTINCT room) FROM class) );
```

Below the editor, the 'Result Grid' shows a table with columns 'fname' and 'fid'. The first row contains the values 'Shiva' and '14'.

The 'Output' window at the bottom shows a list of queries and their execution results:

#	Time	Action	Message	Duration / Fetch
162	12:49:31	SELECT S.age, S.slevel FROM STUDENT S GROUP BY S.age, S.slevel HAVING S.m IN (SELECT S1.m FR...	Error Code: 1054. Unknown column 'S.slevel' in field list	0.000 sec
163	12:49:52	SELECT S.age, S.m FROM STUDENT S GROUP BY S.age, S.m HAVING S.m IN (SELECT S1.m FROM ST...	3 row(s) returned	0.000 sec / 0.000 sec
164	12:56:04	select * from STUDENT LIMIT 0, 1000	6 row(s) returned	0.000 sec / 0.000 sec
165	12:56:21	select * from FACULTY LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
166	12:56:30	select * from class LIMIT 0, 1000	8 row(s) returned	0.000 sec / 0.000 sec
167	12:56:47	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
168	12:57:01	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
169	13:04:31	SELECT DISTINCT S.Sname FROM Student S, Class C, Enrolled E, Faculty F WHERE S.anum = E.anum AN...	1 row(s) returned	0.000 sec / 0.000 sec
170	13:05:00	SELECT DISTINCT S.aname FROM Student S WHERE S.anum IN (SELECT E1.anum FROM Enrolled E1, Enr...	1 row(s) returned	0.000 sec / 0.000 sec
171	13:05:14	SELECT f.fname,f.fid FROM faculty f WHERE f.fid in (SELECT fid FROM class GROUP BY fid HAVING C...	1 row(s) returned	0.000 sec / 0.000 sec

-- Query 5

```
SELECT DISTINCT F.fname  
FROM Faculty F  
WHERE 5 > (SELECT COUNT(E.snum)  
FROM Class C, Enrolled E  
WHERE C.cname = E.cname  
AND C.fid = F.fid);
```

The screenshot displays the MySQL Workbench interface. The central editor shows the following SQL query:

```
-- Query 5  
SELECT DISTINCT F.fname  
FROM Faculty F  
WHERE 5 > (SELECT COUNT(E.snum)  
FROM Class C, Enrolled E  
WHERE C.cname = E.cname  
AND C.fid = F.fid);
```

The 'Result Grid' pane below the query shows the results of the query, which are the names of the faculty members: Hrish, Mira, and Shiva. The 'Output' pane at the bottom shows the execution log, including the time taken for each step and the number of rows returned.

#	Time	Action	Message	Duration / Fetch
163	12:49:52	SELECT S age, S M FROM STUDENT S GROUP BY S age, S M HAVING S M IN (SELECT S1 M FROM ST...	3 row(s) returned	0.000 sec / 0.000 sec
164	12:56:04	select * from STUDENT LIMIT 0, 1000	6 row(s) returned	0.000 sec / 0.000 sec
165	12:56:21	select * from FACULTY LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
166	12:56:30	select * from class LIMIT 0, 1000	8 row(s) returned	0.000 sec / 0.000 sec
167	12:56:47	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
168	12:57:01	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
169	13:04:31	SELECT DISTINCT S.sname FROM Student S, Class C, Enrolled E, Faculty F WHERE S.snum = E.snum AN...	1 row(s) returned	0.000 sec / 0.000 sec
170	13:05:00	SELECT DISTINCT S.sname FROM Student S WHERE S.snum IN (SELECT E1.snum FROM Enrolled E1, Enr...	1 row(s) returned	0.000 sec / 0.000 sec
171	13:05:14	SELECT f.fname f fid FROM faculty f WHERE f.fid in (SELECT fd FROM class GROUP BY fd HAVING C...	1 row(s) returned	0.000 sec / 0.000 sec
172	13:05:25	SELECT DISTINCT F.fname FROM Faculty F WHERE 5 > (SELECT COUNT(E.snum) FROM Class C, Enrolled...	4 row(s) returned	0.000 sec / 0.000 sec

-- Query 6

SELECT DISTINCT S.sname

FROM Student S

WHERE S.snum NOT IN (SELECT E.snum

FROM Enrolled E);

The screenshot displays the MySQL Workbench interface. The SQL editor at the top contains the following query:

```
86 AND C.fid = F.fid);  
87  
88 -- Query 6  
89 SELECT DISTINCT S.sname  
90 FROM Student S  
91 WHERE S.snum NOT IN (SELECT E.snum  
92 FROM Enrolled E );
```

The query is executed, and the results are shown in the 'Result Grid' pane. The results are as follows:

sname
Rita

The 'Output' pane at the bottom shows the execution log, including the following entries:

#	Time	Action	Message	Duration / Fetch
164	12:56:04	select * from STUDENT LIMIT 0, 1000	6 row(s) returned	0.000 sec / 0.000 sec
165	12:56:21	select * from FACULTY LIMIT 0, 1000	5 row(s) returned	0.000 sec / 0.000 sec
166	12:56:30	select * from class LIMIT 0, 1000	8 row(s) returned	0.000 sec / 0.000 sec
167	12:56:47	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
168	12:57:01	select * from enrolled LIMIT 0, 1000	10 row(s) returned	0.000 sec / 0.000 sec
169	13:04:31	SELECT DISTINCT S.sname FROM Student S, Class C, Enrolled E, Faculty F WHERE S.snum = E.snum AND...	1 row(s) returned	0.000 sec / 0.000 sec
170	13:05:00	SELECT DISTINCT S.sname FROM Student S WHERE S.snum IN (SELECT E1.snum FROM Enrolled E1, Enr...	1 row(s) returned	0.000 sec / 0.000 sec
171	13:05:14	SELECT f.fname f.fid FROM faculty f WHERE f.fid in (SELECT fd.fid FROM class GROUP BY fd HAVING C...	1 row(s) returned	0.000 sec / 0.000 sec
172	13:05:25	SELECT DISTINCT F.fname FROM Faculty F WHERE S > (SELECT COUNT(E.snum) FROM Class C, Enrolled...	4 row(s) returned	0.000 sec / 0.000 sec
173	13:05:37	SELECT DISTINCT S.sname FROM Student S WHERE S.snum NOT IN (SELECT E.snum FROM Enrolled E)...	1 row(s) returned	0.016 sec / 0.000 sec

The query is completed, and the status bar at the bottom indicates 'Query Completed'.

-- Query 7

```
SELECT S.age, S.lvl  
FROM STUDENT S  
GROUP BY S.age, S.lvl  
HAVING S.lvl IN (SELECT S1.lvl  
FROM STUDENT S1  
WHERE S1.age=S.age  
GROUP BY S1.age, S1.lvl  
HAVING COUNT(*) >= ALL (SELECT COUNT(*)  
FROM STUDENT S2  
WHERE S1.age=S2.age  
GROUP BY S2.lvl, S2.age))  
ORDER BY S.age;
```

